

Air Force Civil Engineer Center



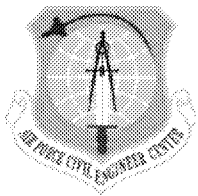
*FORMER
WILLIAMS AIR FORCE BASE*

Site ST012

**Former Liquid Fuel
Storage Area**

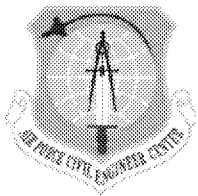
**BCT Conference Call
22 June 2017**

Battle Ready... Built Right!



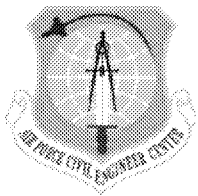
Site ST012 Outline

- **Summary of Activities Since May BCT call**
- **SVE Methane Evaluation**
- **LNAPL Monitoring/Removal Update**
- **Perimeter Groundwater Concentration Update**
- **Path Forward**



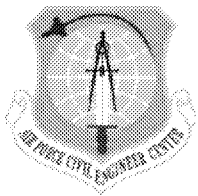
Site ST012 Activities Since May

- **Continued SVE operation**
- **Continued LNAPL screening in accessible SEE wells and Phase I characterization wells**

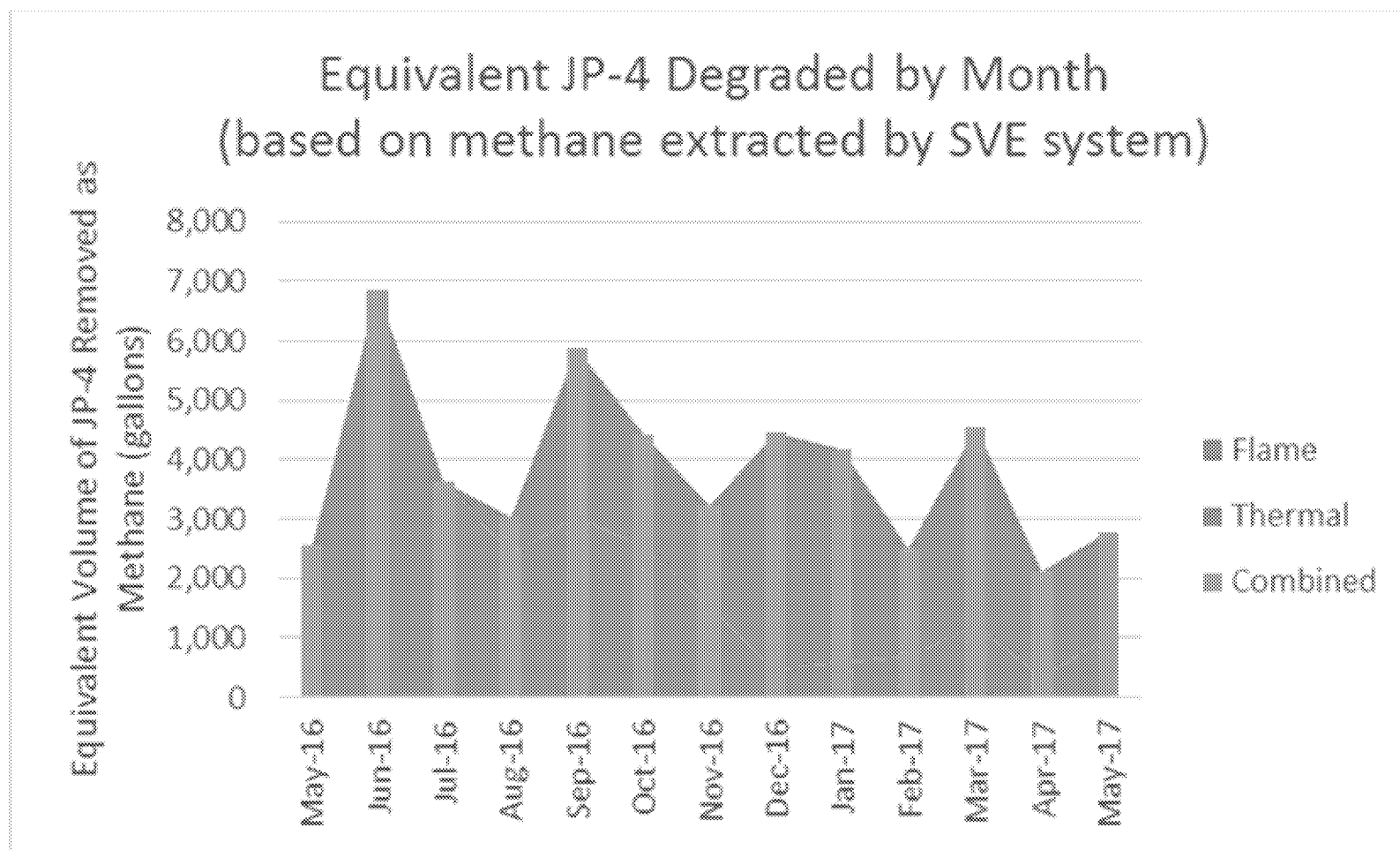


Site ST012 SVE System Equivalent JP-4 Degradation Based on Methane Removed

- **Calculate Methane Flow Rate:**
 - Methane Influent Concentration x Oxidizer Flow Rate x Period Length x Uptime = Methane Flow Rate
 - Convert to methane molar flow rate using standard molar volume
- **Convert Methane Flow Rate to JP-4 Equivalent**
 - **Approximate JP-4 average molecular formula**
 - Formulas from two sources:
 - $C_6H_8N_{0.0625}O_{0.25}S_{0.015625}$, Molecular Weight 85.5
 - $C_{8.5}H_{17}$, Molecular Weight 119.2
 - Both provide similar overall results
 - **Convert methane molar flow rate to JP-4 equivalent molar flow rate based on number of carbon atoms**
 - **Convert JP-4 molar flow rate back to gallons using molecular weight and typical JP-4 liquid density**

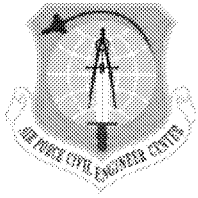


Site ST012 SVE System Equivalent JP-4 Degradation Based on Methane Removed

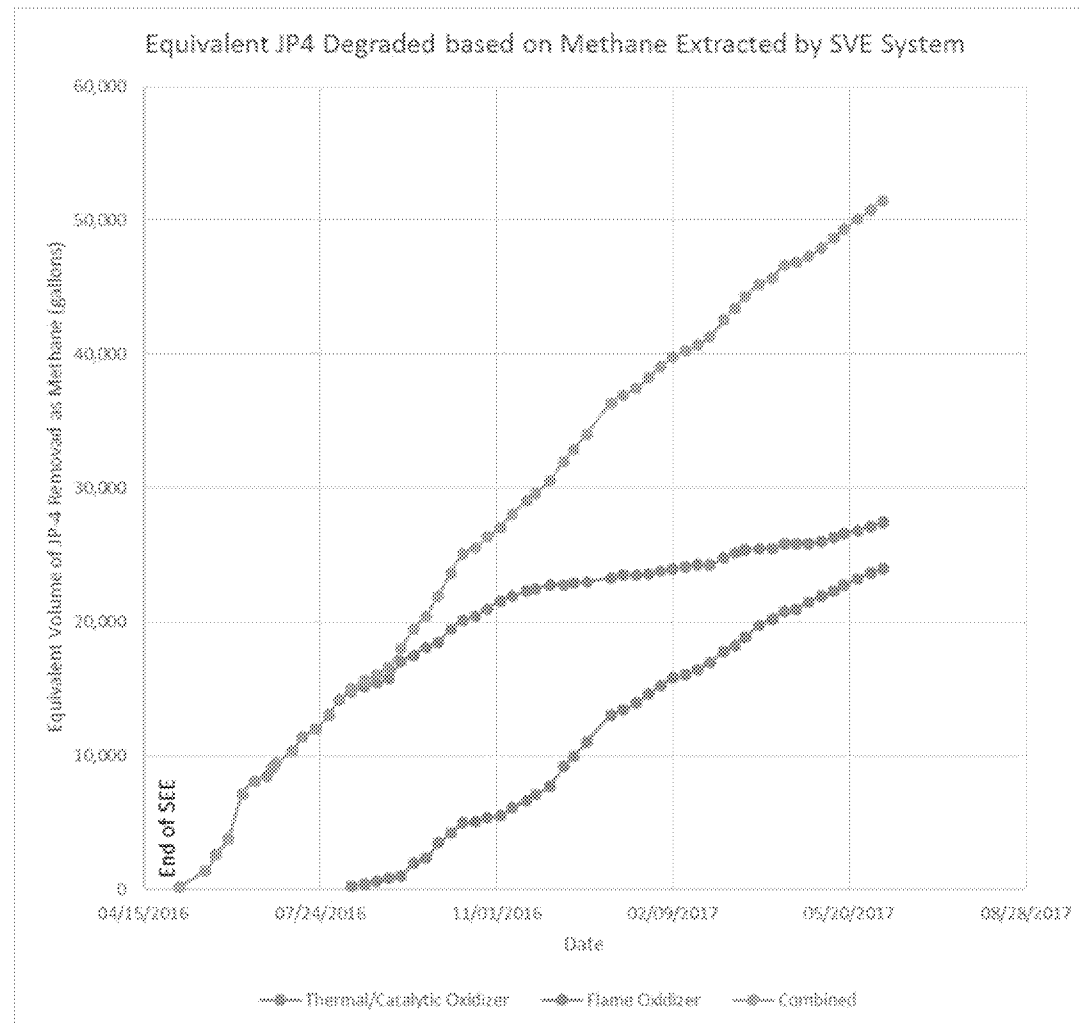


Estimated JP-4 degradation as methane is in addition to JP-4 removal reported for SVE

6/22/2017

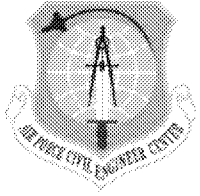


Site ST012 SVE System Equivalent JP-4 Degradation Based on Methane Removed



Estimated JP-4 degradation as methane is in addition to JP-4 removal reported for SVE

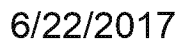
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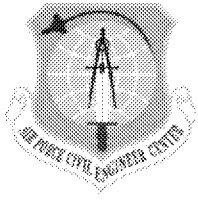


LNAPL Monitoring Update (through 9 Jun)

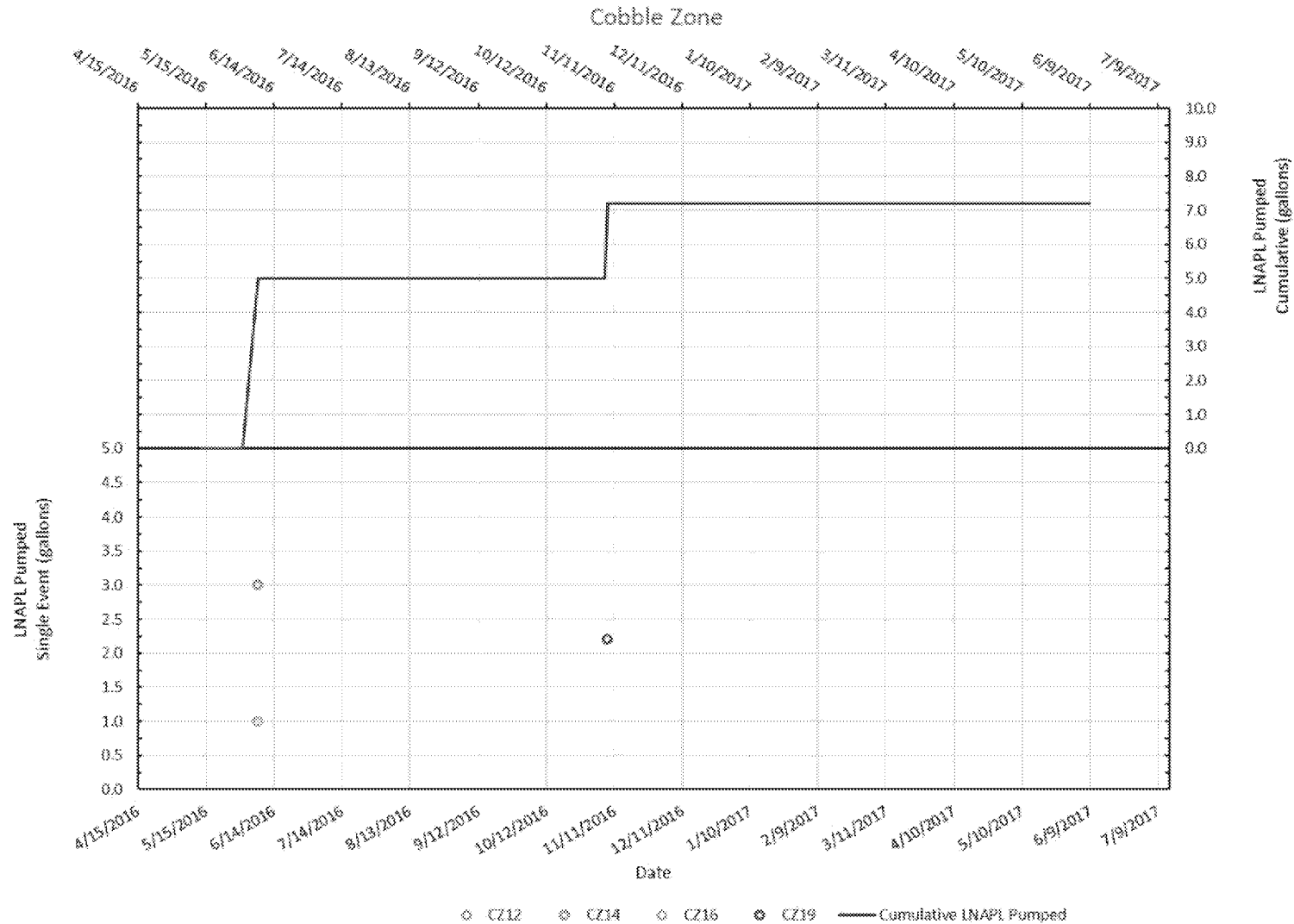
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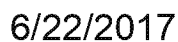


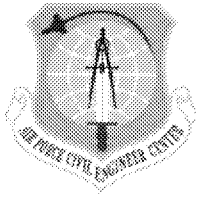


LNAPL Monitoring/Removal Status Cobble Zone

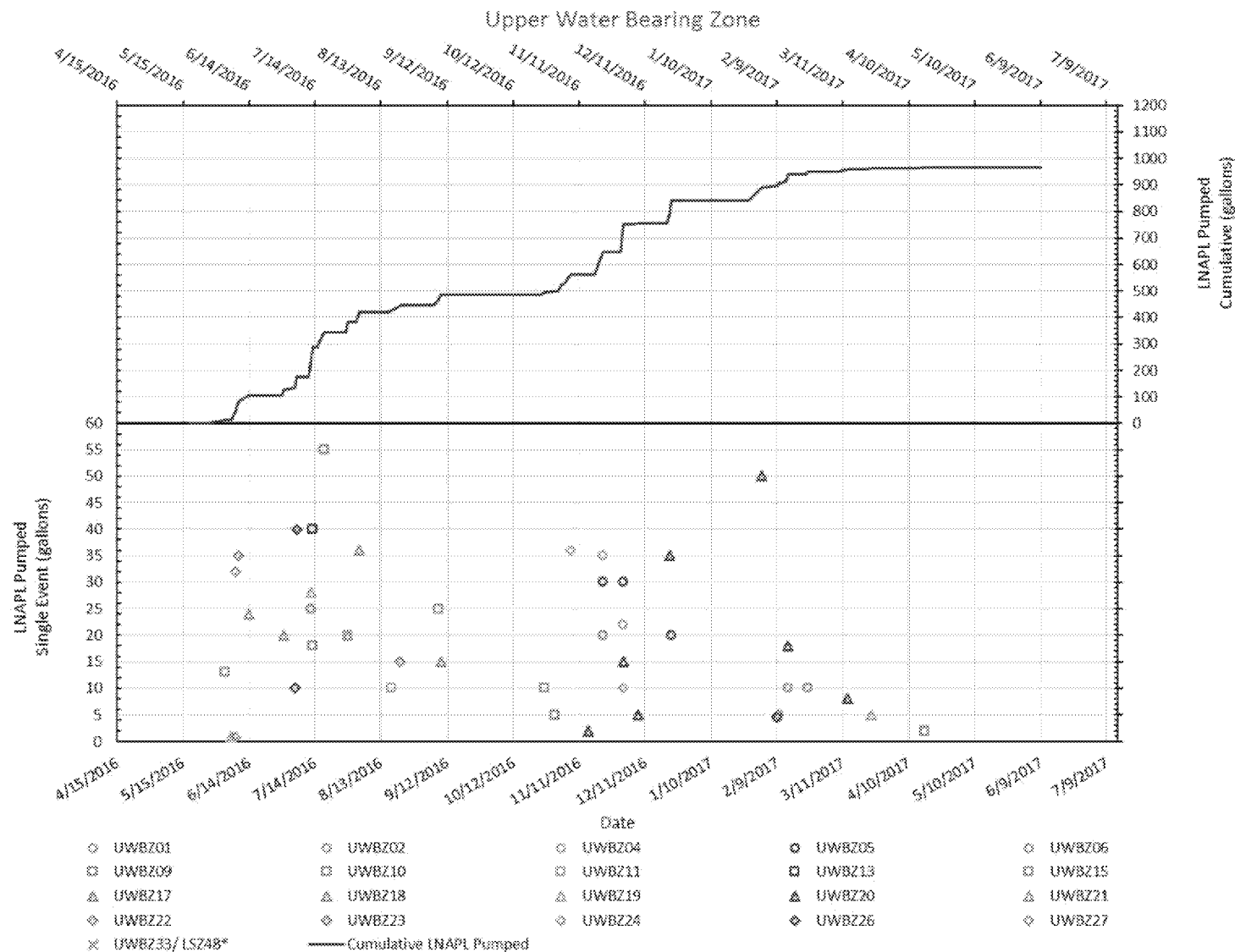


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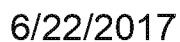


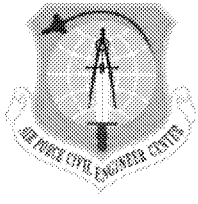


LNAPL Monitoring/Removal Status Upper Water Bearing Zone



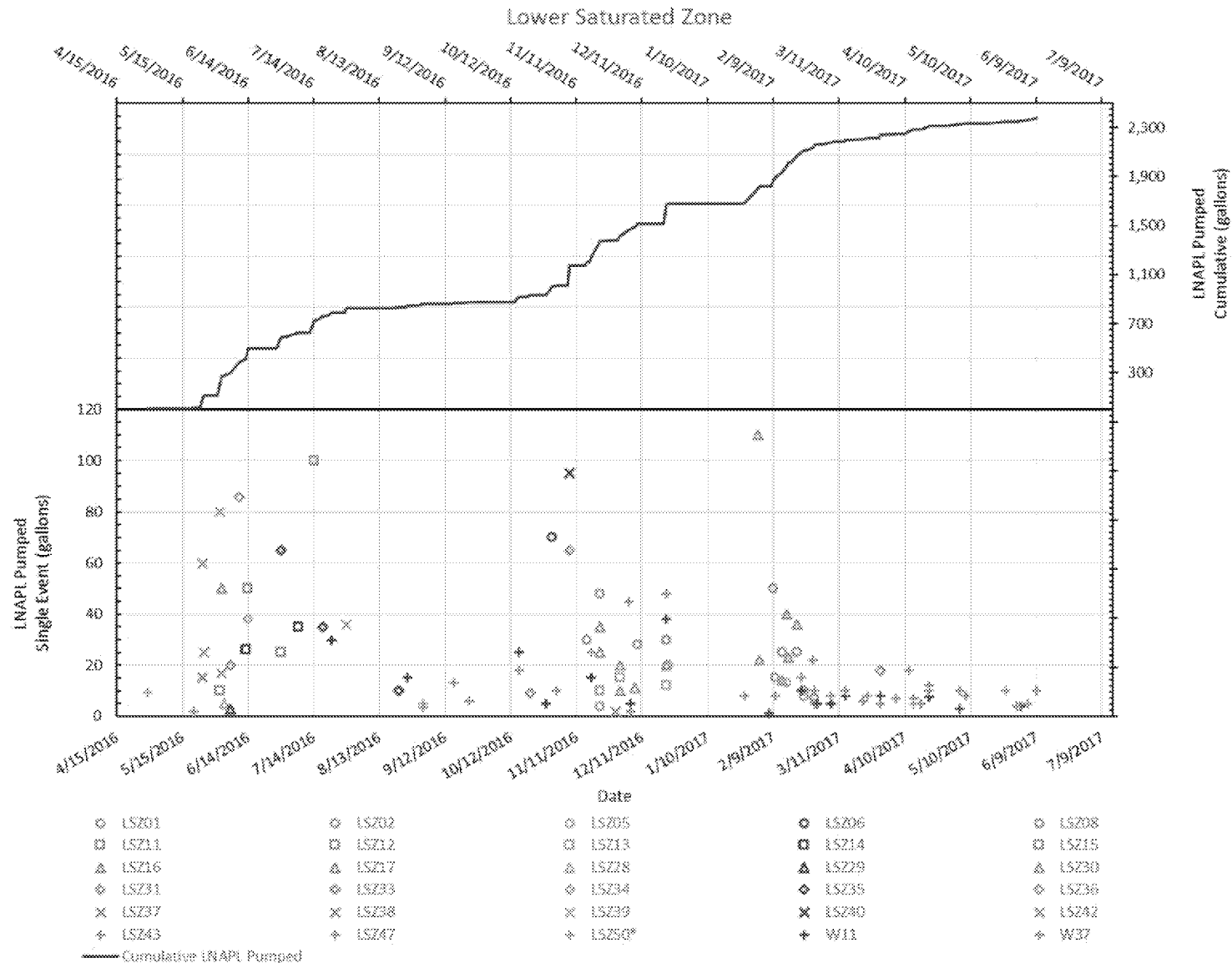
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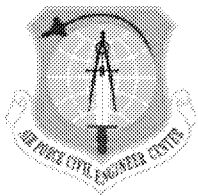


LNAPL Monitoring/Removal Status

Lower Saturated Zone

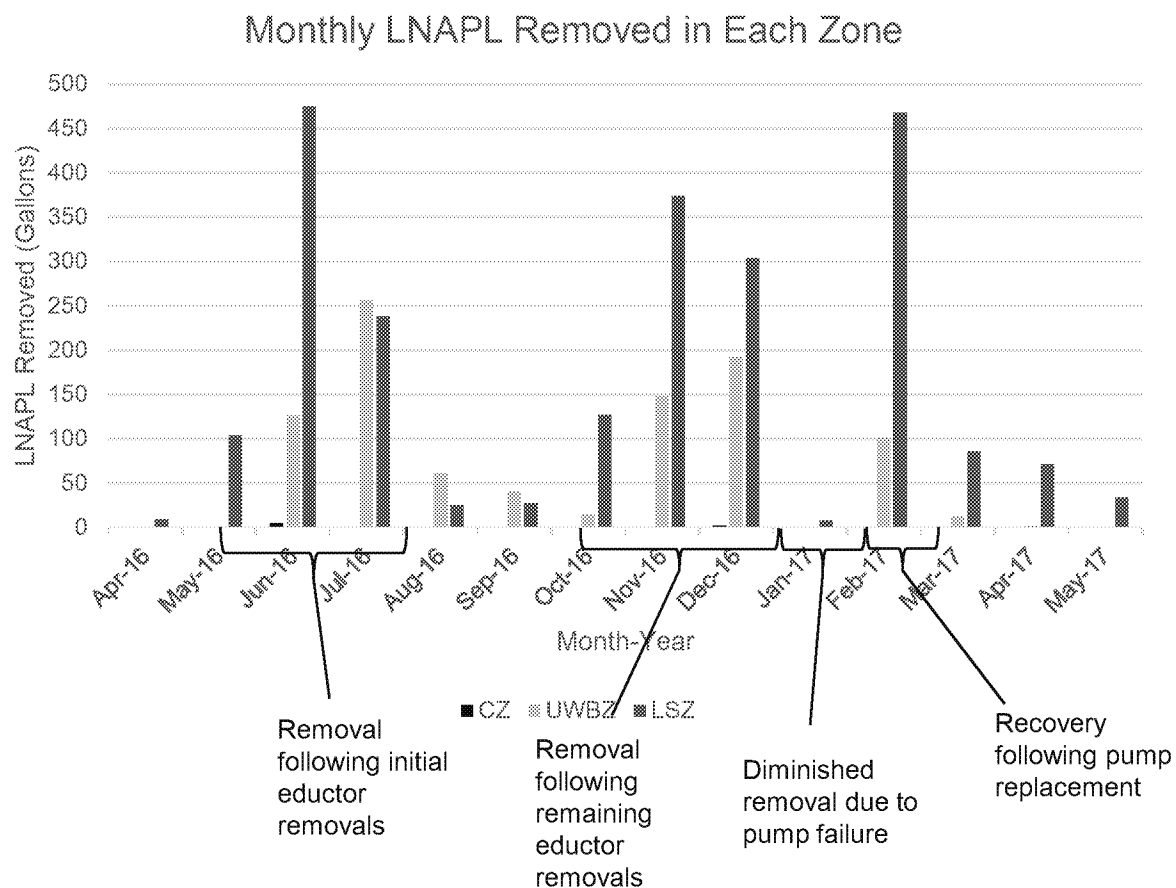


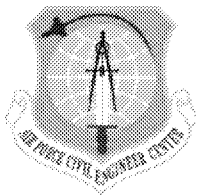
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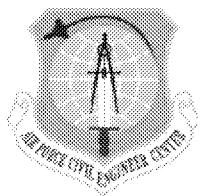
ST012 LNAPL Monitoring/Removal Summary

- **CZ** – ~7 gallons of LNAPL removed. None since May 2017 BCT update
- **UWBZ** - ~950 gallons of LNAPL removed. None since May 2017 update.
- **LSZ** - ~2,350 gallons of LNAPL removed. ~50 gallons removed since May 2017 update. All LNAPL removed since May 2017 from wells outside TTZ perimeter (W11,W37).

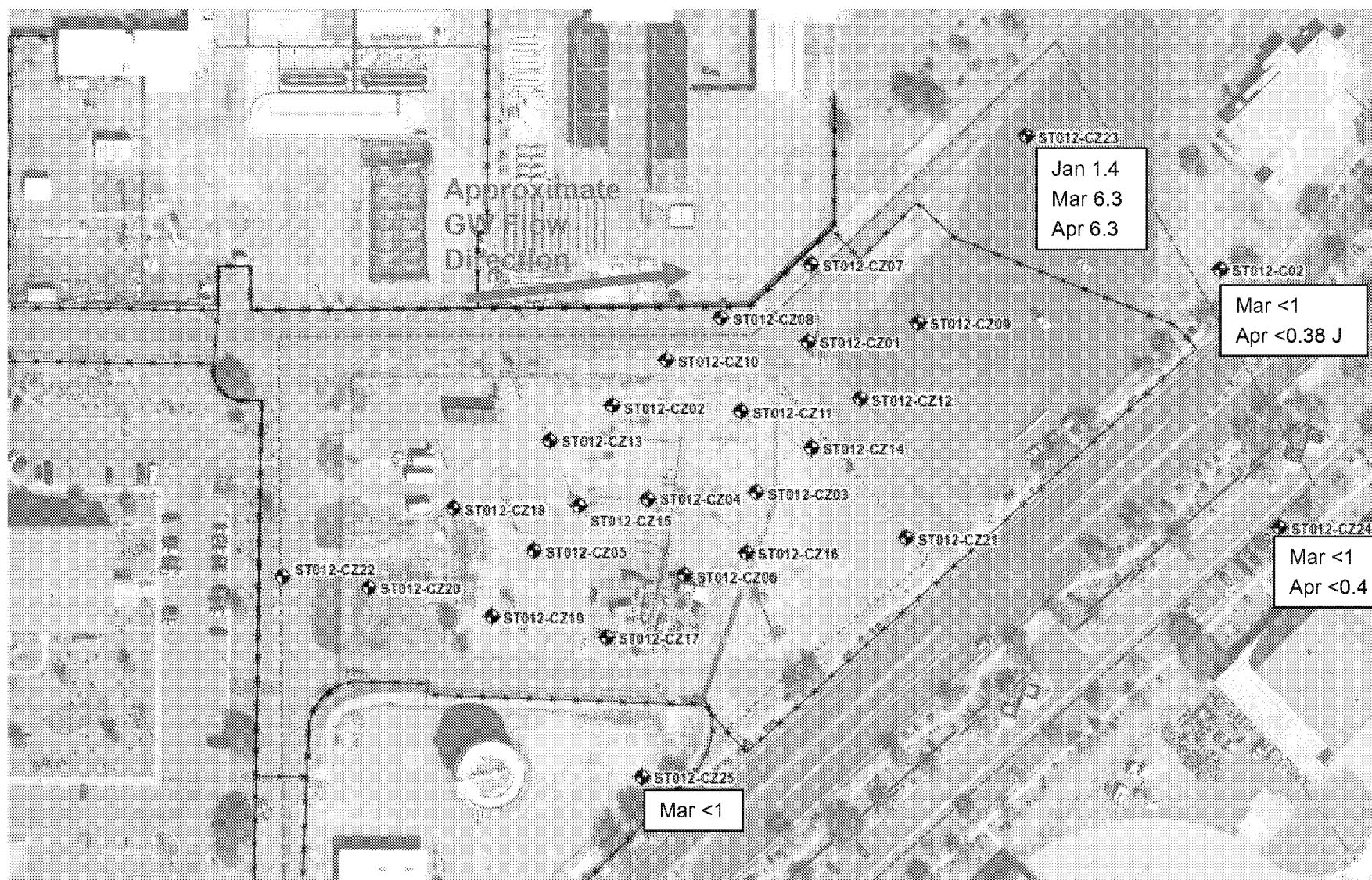




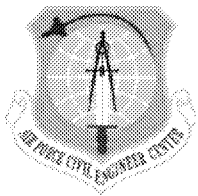
Groundwater Concentrations



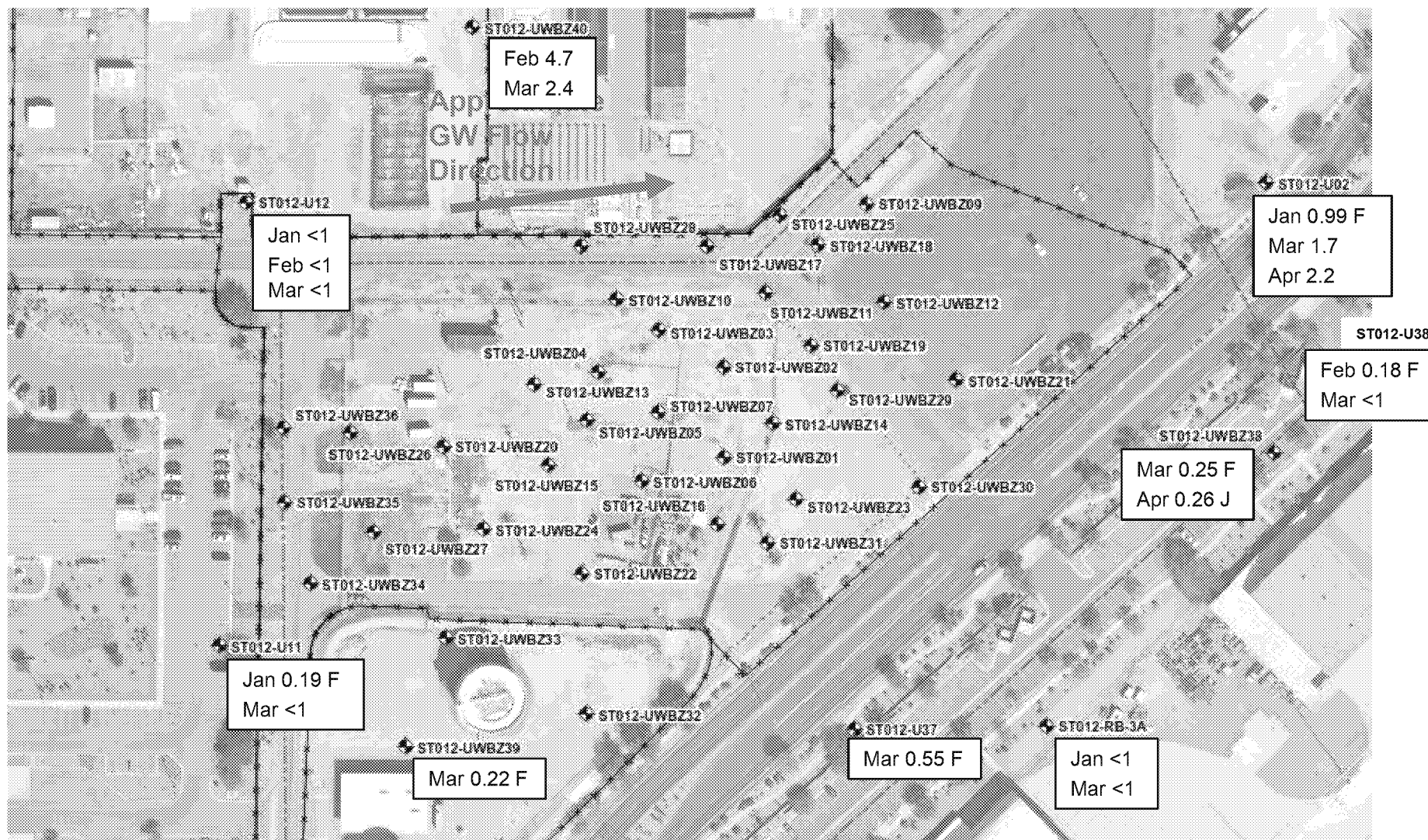
Site ST012 CZ Perimeter Benzene Groundwater Results ($\mu\text{g/L}$)



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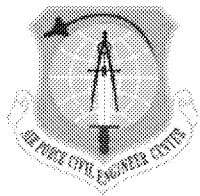


Site ST012 UWBZ Perimeter Benzene Groundwater Results ($\mu\text{g/L}$)

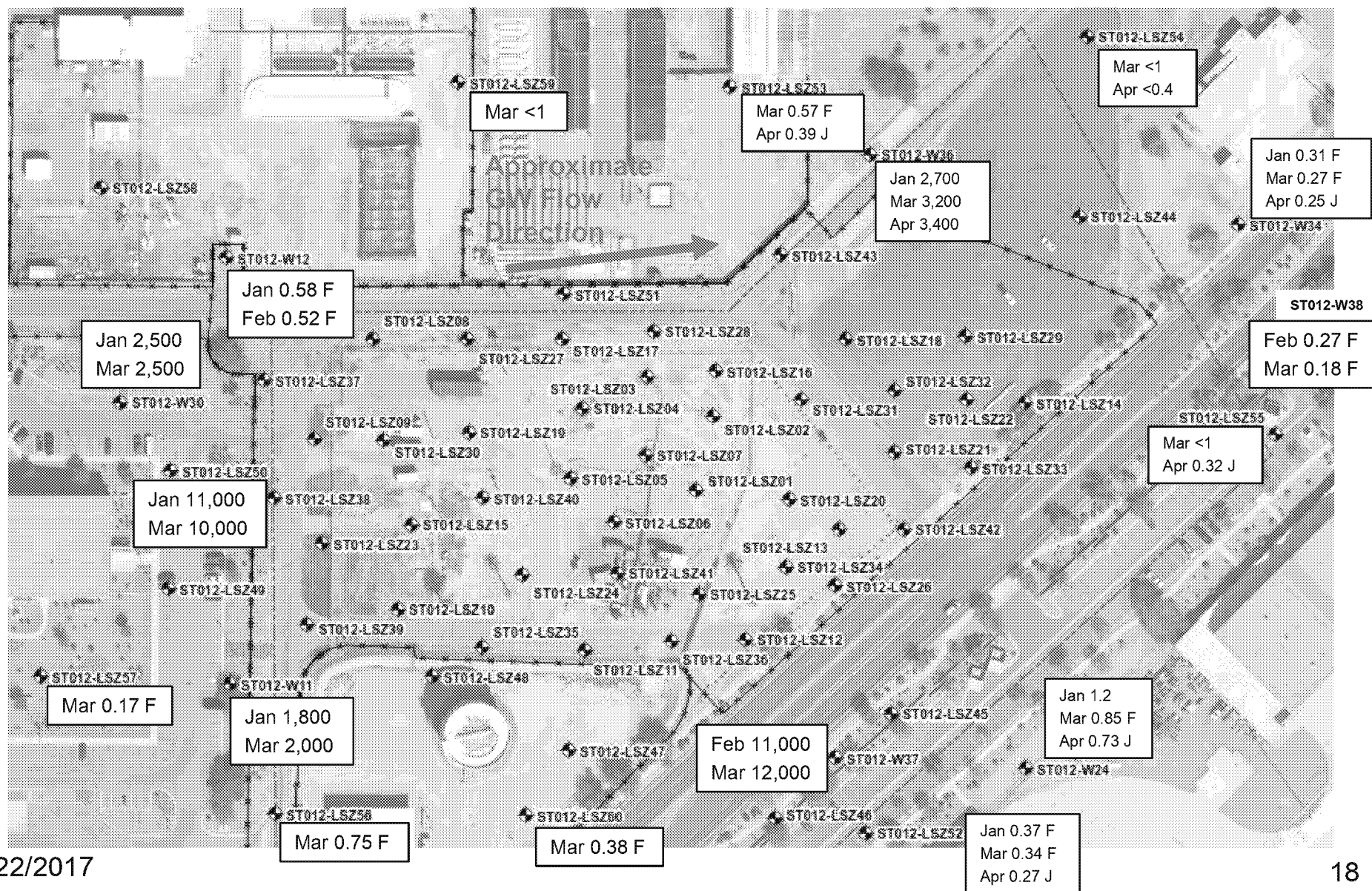


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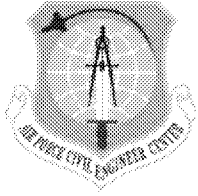
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Site ST012 LSZ Perimeter Benzene Groundwater Results ($\mu\text{g/L}$)

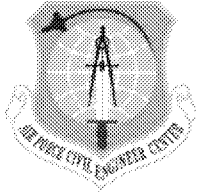


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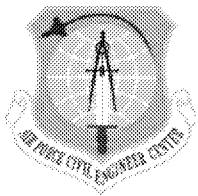
Site ST012 Path Forward

- **Revised Draft Final RD/RAWP Amendment 2 Submittal** **Jul 2017**
- **Baseline Resampling** **Aug 2017**
- **Order Sodium Sulfate** **Aug 2017**
- **Install Injection Components** **Aug-Sep 2017**
- **Start Extraction** **Sep-Oct 2017**
 - Evaluate effect on LNAPL accumulation/recovery
- **Begin Injections** **Nov 2017**



Site ST012 Addendum #2

- **Revised Draft Final RD/RAWP Addendum #2 revisions will include:**
 - The revised mass estimate
 - A revised Phase 1 injection extraction plan based on results from the EBR well installation and additional characterization
 - Updated model results based on the current EBR extraction/injection well layout
 - A re-baseline sampling event due to the delay in EBR implementation
 - The decision matrix table and flow chart
 - Response to EPA and ADEQ comments submitted on 22 Aug 2016
 - Response to ADEQ comments submitted on 27 Oct 2016 (predominantly on EBR) on Draft Final (responses submitted to ADEQ 10 April 2017)



AF/EPA/ADEQ letters/comments since March BCT call

- **EPA Modeling Comments (24 Mar 2017)**
 - Responses in preparation (AF review)
- **ADEQ Mass Estimate Calculations Comments (16 May 2017)**
 - Responses in preparation
- **EPA/ADEQ Time of Remediation Estimates (30 May 2017)**
 - Evaluation in process
- **EPA List of Concerns**
 - Received on 22 Jun 2017

Air Force Civil Engineer Center



2017 BCT MEETINGS/CONFERENCE CALLS SCHEDULE DELIVERABLE TRACKING

**BCT Conference Call
22 June 2017**

Air Force Civil Engineer Center



ACTION ITEMS

**BCT Conference Call
22 June 2017**